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ABSTRACT

An assessment of the information needs of providers of literacy services examined whether these needs could be met through an electronic information and communications system (EICS). The needs assessment was sent to 300 literacy providers; 134 responded. Responses indicated that literacy providers would benefit from a central, easily accessible EICS, if it were inexpensive and required minimal computer equipment and training. Findings from a survey of existing information centers and systems showed that existing organizations compiled and maintained necessary information, but no electronically accessible repository of frequently requested information existed. There was electronic access to a subset of information, but users were charged for service and had to pay startup and/or annual fees. A prototype EICS demonstrated needed information and communication-based services in a simple and user-friendly manner. The prototype had the following characteristics: was extremely flexible; required no programming to set up new databases and bulletin board systems; ran on a personal computer; could be accessed via standard telephone lines; required little maintenance; and provided electronic access to literacy-oriented databases primarily on a fixed cost basis. The prototype was demonstrated to literacy providers with positive results. (Appendixes include the needs assessment instrument, descriptions of existing information centers/systems, prototype EICS user's guide, and procedures for setting up a new application.) (YLB)

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SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)

LITERACY PROJECT PHASE I

FINAL REPORT

Contract No. RN91076002

April, 1992

Prepared for:

U.S. Department of Education
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U.S. DEPARTMENT OF EDUCATION
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EXECUTIVE SUMMARY

Under a grant from the U.S. Department of Education, Small Business Innovative Research (SBIR) Program, COMSIS Corporation performed an assessment of the information needs of providers of literacy services. Specifically, this assessment sought to determine whether literacy providers would benefit from access to an electronic information and communications system (EICS), and if so, what features would be most useful in such a system. The following steps were performed:

- A needs assessment was conducted to identify interests and needs;
- A survey of existing systems was performed to identify current capabilities;
- A prototype EICS was developed to address specific needs not currently served; and
- The prototype was demonstrated as a means to solicit comments and suggestions from literacy agencies.

The findings from the needs assessment were:

- Literacy providers are a diverse group who could benefit from improved communications among themselves and access to a central repository of information relevant to their field; and
- Literacy providers would appreciate a central, easily accessible EICS, provided it is low-cost and requires minimal computer equipment and training.

The findings from the survey of existing information centers and systems were:

- Necessary information is compiled and maintained by existing organizations, but there is no electronically accessible repository of frequently requested information;
- There is electronic access to a subset of the information, but users are charged for service and must pay startup and/or annual fees;
- None of the available systems are easily tailored, PC-based systems; and
- None of the available systems include user communication (e.g., bulletin board and electronic mail) capabilities.

The prototype EICS demonstrated needed information and communication based services in a simple and user-friendly manner; it requires little computer familiarity. The system is extremely flexible; setting up new databases and bulletin board systems requires no programming. Menus are controlled with text files, thus, the system can be easily tailored to any target audience. This system, which runs on a personal computer, can be accessed via standard telephone lines with very basic computer equipment, and requires little maintenance. The system is designed to provide needed electronic access to literacy-oriented databases primarily on a fixed cost basis. Specifically, the cost of computing resources is fixed at the price of the personal computer. Thus, the on-going system cost is limited to additions to the database and enhancement of the EICS software.

The prototype EICS was demonstrated to representatives from the Department of Education and various literacy agencies with positive results. Discussion centered around:

- Technical and staffing issues involved in establishing and maintaining an EICS;
- Implications of anticipated enhancements; and
- Scenarios whereby literacy providers would get the most effective use from such a system; and
- Availability of the EICS software.

Literacy providers across the country could utilize an EICS to collect, disseminate, update, and share the latest information on literacy. An EICS would allow literacy providers to communicate among themselves, share their resources and techniques, and help each other achieve common literacy goals. The low cost of operation of the EICS would permit current providers of literacy services to offer electronic access to their user community at a cost that is essentially equal to the cost of a telephone call. Further, an EICS would reduce agency staff involvement with repetitive information requests, allowing them to focus on other services.

TABLE OF CONTENTS

Section			Page
1.0	INTRODUCTION		
	1.1	Background	1
	1.2	Objectives	1
2.0	NEEDS ASSESSMENT		
	2.1	Methodology	2
	2.2	Responses and Analysis	3
	2.3	Conclusion	7
3.0	SURVEY OF INFORMATION AND COMMUNICATION SYSTEMS		
	3.1	Available Systems	9
	3.2	Services Provided	9
	3.3	Services Not Provided	10
	3.4	Conclusion	11
4.0	PROTOTYPE EICS		
	4.1	Overview	13
	4.2	Telecommunications	13
	4.3	User Interface	14
	4.4	On-Line User's Guide	15
	4.5	Bulletin Board	16
	4.6	Database Search	16
	4.7	Electronic Mail	18
	4.8	Phase II Additions	19
		4.8.1 Account Tracking	19
		4.8.2 On-Line Ordering	19
		4.8.3 On-Line Critique Submission	20
		4.8.4 User Account Maintenance	20
		4.8.5 Inclusion of Existing Databases	20
		4.8.6 Session Logs	20
	4.9	Application to Other Domains	21
	4.10	Conclusion	21
5.0	PROTOTYPE EICS DEMONSTRATION		23
6.0	PROJECT CONCLUSIONS		24
APPENDIX A -- NEEDS ASSESSMENT INSTRUMENT			A-1
APPENDIX B -- EXISTING INFORMATION CENTERS/SYSTEMS			B-1
APPENDIX C -- PROTOTYPE EICS USER'S GUIDE			C-1
APPENDIX D -- PROCEDURES FOR SETTING UP A NEW APPLICATION			D-1

LIST OF FIGURES

Figure		Page
FIGURE 1	- NUMBER OF RESPONDENTS BY ORGANIZATION	4
FIGURE 2	- TYPE OF INFORMATION NEEDED TO PROVIDE QUALITY INSTRUCTION TO STUDENTS	6
FIGURE 3	- RESPONDENTS INTERESTED IN ACCESS TO AN EICS	8
FIGURE 4	- SAMPLE COSTS FOR COMMERCIAL SERVICES	12

1. INTRODUCTION

1.1 Background

According to the National Literacy Act of 1991, there are nearly 30,000,000 adults in the United States with literacy problems. The language and literacy teachers in adult education who are addressing this problem are a diverse group. They differ in personal background, education, professional experience, interest in literacy, and enthusiasm for teaching. They may teach in community centers, or they may tutor in libraries, prisons, churches and synagogues, or in housing projects. The focus in teaching literacy may vary with the goals of the students: some students want to gain greater independence, access services, and take advantage of greater job opportunities; others may or may not be literate in their own first language and are trying to learn English. As a group, however, literacy providers support teaching that is learner-centered, striving to meet the needs of students and enable them to meet their goals.

One of the national education goals is to help make every adult literate by the year 2000. Thus, programs which address literacy concerns are gaining in importance. Serving literacy providers in their efforts has, therefore, become an issue of national significance.

1.2 Objectives

Under a grant from the U.S. Department of Education Small Business Innovative Research (SBIR) program, COMSIS Corporation has performed an assessment of the information needs of providers of literacy services. The objective of this assessment was to determine if some of the literacy providers' information needs could be met through the use of an electronic information and communications system (EICS).

The project was completed in four steps:

- Conduct a needs assessment of literacy providers;
- Survey similar information and communication systems used by literacy providers, if any;
- Design and develop an EICS prototype; and
- Convene a meeting of key Department of Education and literacy agency staff to demonstrate the prototype; solicit comments and suggestions which may be used in refining the system to be developed and implemented in Phase II.

This report contains the results of the SBIR Phase I effort.

2. NEEDS ASSESSMENT

2.1 Methodology

COMSIS coordinated this effort with the Institute for Adult Literacy (at Pennsylvania State University) and the National Clearinghouse on Literacy Education (at the Center for Applied Linguistics) to obtain lists of literacy providers nationwide. COMSIS developed a needs assessment instrument, i.e., questionnaire (see Appendix A), which asked respondents to describe the type of literacy program with which they are affiliated, any EICS systems which they use on a regular basis, the types of information they need to provide quality instruction to their students, the type of computer equipment to which they have access, and their familiarity with using computers and communications packages. The contracting officer's technical representative (COTR) from the U.S. Department of Education, Office of Educational Research reviewed and approved the needs assessment instrument and cover letter. A test of the needs assessment instrument was conducted by providing a copy to seven literacy providers. Four of the seven recipients responded. The only change suggested by that group was to add the specific question, "Would you be interested in access to an Electronic Information Communication System?" This question was added to the needs assessment instrument.

The needs assessment was sent to a stratified, structured sample of 300 literacy providers. Providers were selected to receive the needs assessment instrument based on location and type of organization. All states and the District of Columbia had at least one provider on the list of literacy providers. The number of providers per state (and DC) ranged from one to 44. For each location, if only one or two providers were on the list, all were chosen to participate in the needs assessment. If more than two providers in a given location were listed, an effort was made to include as many different types of organizations as possible. These types included: colleges/universities, public schools/adult education, correctional facilities, public libraries, churches, adult learning centers, YMCA/YWCA, commercial schools, volunteer organizations, and charitable organizations. Follow-up to non-respondents was conducted via telephone interviews. The results were compiled, and the information obtained was used in designing the prototype system.

By the pre-established cut-off time for responses, 134 responses had been received. Responses were received from 40 states and the District of Columbia. States not responding were: Alabama, Alaska, Hawaii, Iowa, Kansas, Nevada, North Dakota, Rhode Island, Vermont, and West Virginia. Seven responses bearing no state identification were received.

2.2 Responses and Analysis

The first question on the needs assessment questionnaire asked the respondents to describe their literacy program and to attach a copy of any brochures that describe their services. Respondents indicated that the five most common literacy programs were operated by the following types of organizations:

Public Schools/Adult Education	33
Volunteer Organizations	22
Colleges/Universities	17
Libraries	10
Coalition Groups	10
Other	42

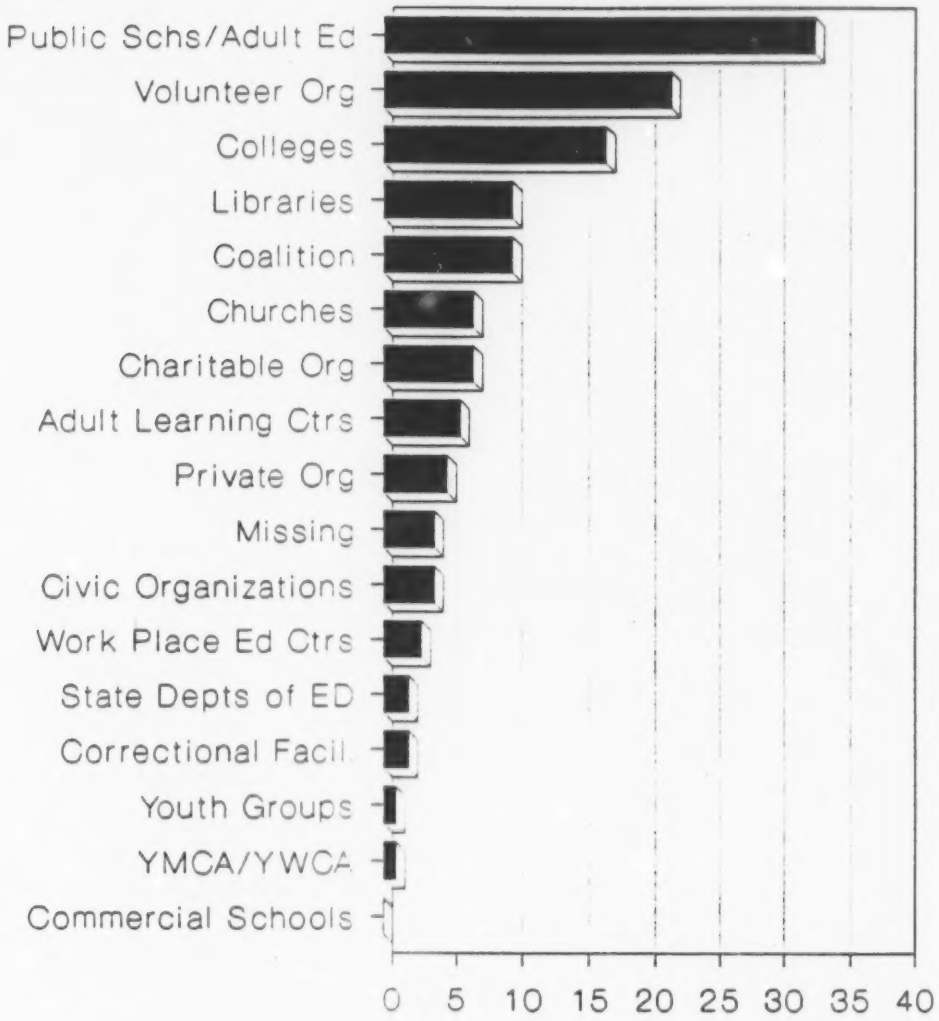
The category "Other" includes the following groups:

Charitable Organizations	7
Churches/Church Organizations	7
Adult Learning Centers	6
Private Groups	5
Civic Organizations	4
Work Place Educational Centers	3
Correctional Facilities	2
State Departments of Education	2
Youth Group	1
YMCA/YWCA	1

Question 2 asked if the respondents are affiliated with a specific group. Of the 134 responses received, 99 (74%) are affiliated with a group or organization. Figure 1, Number of Respondents By Organization, shows the number of respondents by types of organization.

Questions 3, 4, and 5 asked about the respondent's ability to dial into information systems. If the respondent answered affirmatively, the respondent was asked to describe how this is accomplished and to list the name(s) of the system(s). Responses to these three questions indicated a general lack of understanding of telecommunications terms and usage. Only 21 responses (16%) indicated that the respondent has this ability. Fewer respondents were able to describe how they dialed into another information system. One response cited "BITNET" and several indicated the use of a modem. Other responses included, "by direct telephone," "through monthly meetings," and "we have this ability." These comments support the responses to question 11 ("Would you be interested in access to an EICS?") for which at least 17 (13%) of the respondents indicated that they do not understand what an EICS is or how one operates. The names of the systems listed, by those indicating use of a system, included OTAN, COMPUSERVE, and America On-line.

Number of Respondents by Organization



Total number of respondents: 134

NUMBER OF RESPONDENTS BY ORGANIZATION

FIGURE 1

Question 6 asked the respondents what type of information was needed to provide quality instruction to students. The choices provided on the needs assessment questionnaire, the number of replies, and the percent of the total responses are listed below. Figure 2, Information Needed to Provide Quality Instruction to Students, presents this information in graphic format.

	No. of Replies	Percentage
Training Materials	96	72%
Computer Software	91	68%
Assessment Instruments	65	49%
Greater Interaction with Other Organizations	64	48%
Training Materials Critique	63	47%
Topical Publications	59	44%
Other Databases	31	23%

In addition to the eight choices presented above, the questionnaire contained a category labelled "Other" for write-in responses. Write-in responses included: consumable materials, money, funding sources, and informed assessments.

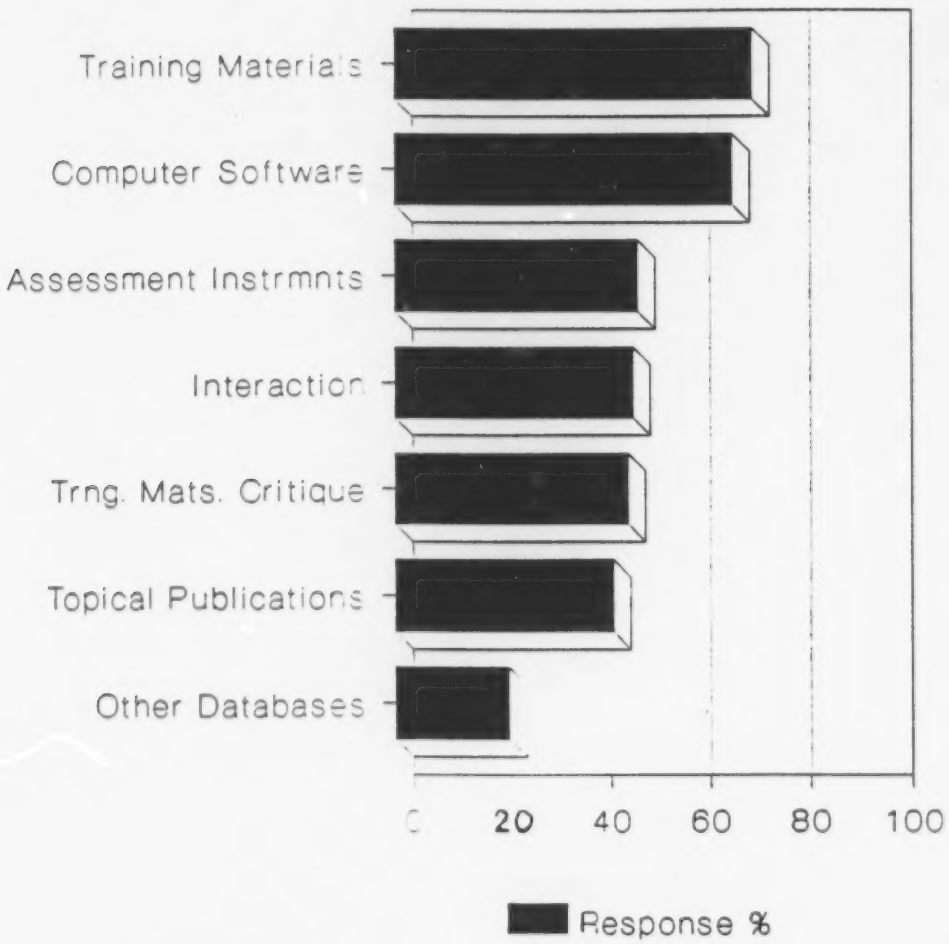
Questions 7 and 8 asked the respondents if they are familiar with using computers and communication packages and if they have access to computer equipment. One hundred six (79%) replied that they are familiar with using computers and communication packages. One hundred twenty-one (90%) said they have access to computer equipment.

Question 9 asked the respondents to describe their equipment in general terms (e.g., IBM PC or Apple with a modem). Computers mentioned included Apple, Macintosh, IBM, and IBM compatibles.

Question 10 asked if the respondents use the computer equipment to communicate with other information systems. In response to this question, 21 respondents (16%) indicated that they use their computer equipment to communicate with other information systems. One hundred eight respondents (84%) indicated that they do not communicate with other information systems.

Question 11 asked if the respondents would be interested in having access to an EICS. Of the 134 respondents, 80 replied "Yes" (60%), 32 replied "No" (24%), and 17 replied "Do Not Know" (13%). In some instances, members of the second group qualified their responses with a concern for cost or with the stipulation that they were not interested at this time. Many of the third group stated that they did not know if they were interested in access to an EICS at this time because they did not know exactly what an EICS was, how they might use an EICS, or what it would cost. As was the case with those who indicated that they would not be interested in having an EICS at this time, the anticipated cost appeared to be a major factor. Figure 3, Respondents Interested in Access to an EICS,

Type of Information Needed to Provide Quality Instruction to Students



Total number of respondents 134

TYPE OF INFORMATION NEEDED TO PROVIDE QUALITY INSTRUCTION TO STUDENTS

FIGURE 2

6

illustrates the response to question 11.

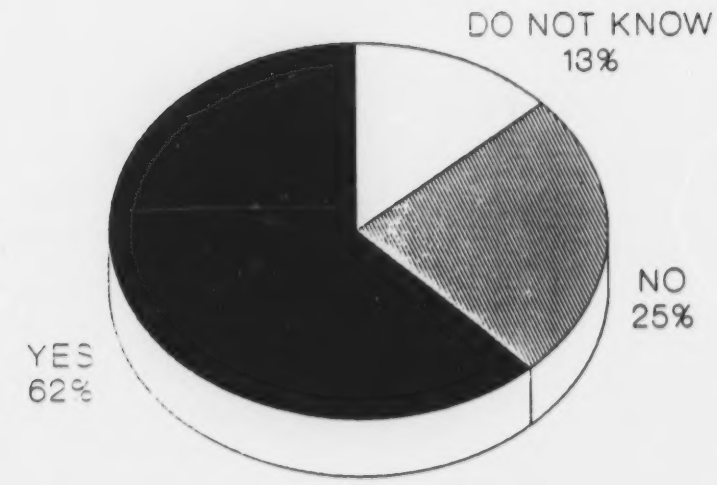
Analysis of the responses to the needs assessment instrument allows the technical questions to be answered as follows:

- The information needs of literacy providers include training materials, computer software, assessment instruments, and greater interaction with other organizations.
- The types of computer equipment to which literacy providers have access are Apple and IBM compatibles.
- Some literacy providers do not understand what an EICS is or how to access one. The EICS that was mentioned most often is the Outreach Technical Assistance Network (OTAN) funded by the California State Department of Education. A majority of the respondents indicated that they would be interested in using an EICS if it were available at little or no cost. The apparent low technical level of computer knowledge among the potential users of an EICS indicates that a successful EICS needs to be extremely user-friendly.
- Volunteers appear to be the most likely individuals to use the EICS.

2.3 Conclusion

Literacy providers are a diverse group whose members include students, retirees, and charity and for-profit organizations. They expressed a need to communicate among themselves; this need is presently not being met. Literacy providers feel that they would benefit from having access to a central repository of information about their field, particularly if it is low-cost. Such a repository should be an easily accessible information system to provide both information and communication within the field. Ideally, such a system would require minimal computer equipment and training.

Would You be Interested in Access to an EICS?



Total number of respondents: 134

RESPONDENTS INTERESTED IN ACCESS TO AN EICS

FIGURE 3

3. SURVEY OF INFORMATION AND COMMUNICATION SYSTEMS

3.1 Available Systems

Based on information obtained in the needs assessment survey, COMSIS identified and reviewed providers of literacy information and their systems (see Appendix B). COMSIS contacted the information providers by telephone, conducted interviews, and solicited written documentation to determine such information as the types of information provided, types of systems used, types of clients served by each center or system, and related costs. The list of organizations surveyed is representative rather than exhaustive; similar types of organizations exist elsewhere but provide essentially the same services. The types of organizations providing information and services include:

- Oversight (policy-level) organizations;
- Research and development organizations;
- Clearinghouses; and
- Program development organizations.

Clearinghouses are the primary mechanism for dissemination of field-related information. In addition to the agencies listed in Appendix B, there are a variety of referral services for volunteers and students. These are generally telephone services which provide contact information.

3.2 Services Provided

The organizations currently providing support to literacy providers fulfill most of the needs of their target clientele. The oversight organizations establish policy and direction; the program development organizations supply such diverse services as training, staff development, budgeting and decision-making assistance, and conference support; and the research and development organizations are primarily involved in the development (as opposed to the dissemination) of new materials, techniques, and related information. These organizations are not of immediate concern. The organizations on which operating literacy providers primarily rely for current information, on topics ranging from materials to funding, are the clearinghouses. These organizations play active and primary roles in the ongoing development of literacy programs and the furtherance of literacy goals by acting as repositories and distributors of current information on most subjects pertinent to the field. The information they collect, maintain, and provide covers all aspects of education, and almost any subject which could impact literacy education. The information readily available through these service organizations includes:

- Current research and practice;
- Literature;

- Training techniques;
- Policy directives;
- Legislation; and
- Access to publications.

Most of these organizations also function as referral centers for inquiries within the field of education but outside their specialty areas. Several of these organizations assist in making searches through large quantities of information by:

- Supplying printings of existing (ready-made) searches of bibliographic databases to streamline research; and/or

- Providing the mechanism for limited on-line access to bibliographic databases of research and journal articles.

The primary mechanisms for obtaining information from these organizations are telephone and mail. Most clearinghouse organizations maintain telephone numbers specifically for this purpose (frequently toll-free). Trained staff will work closely with callers (or the originators of write-in requests) to ensure that necessary information is obtained. This, most importantly, ensures the provision of specialized information tailored to the needs of the requester. Additionally, order forms for publications can be obtained and the publications can be acquired from supporting organizations.

3.3 Services Not Provided

There is a certain amount of information provided by clearinghouse operations which is of general interest. Most information of this nature is currently disseminated via newsletters, digests, and other printed means. For time-critical information, however, telephone service remains the only mechanism for keeping literacy providers up-to-date. This manner of disseminating repetitive information can decrease productivity of information staff. Few of the organizations, for example, have announcement telephone lines to answer oft-repeated questions and provide referrals to callers who may be making a first, untargeted attempt to find an organization to assist with a specific issue. Further, these service organizations generally operate only during normal business hours for their locality, regardless of whether or not they serve clients in different time zones.

None of the surveyed organizations offer any type of electronic access to bulletin boards of news articles, pertinent current events, calendars of events (nationwide), or time-critical information such as pending legislation. Such access could be made available, at a low cost to the user, at all times. This type of service is obviously deemed useful by in-field practitioners. For instance, the New York chapter of Literacy Volunteers of America privately maintains a literacy-specific bulletin board via

America-Online, but this service is only available in-state. Further, practitioners, eager for daily updates on time-critical information, may be hesitant to call service organizations too frequently, even though the information they seek may be critical to their functioning.

Because of the amount of time required to service routine requests for information with limited staff, many service organizations restrict the type of information they disseminate. Most clearinghouses, for example, provide legislative and research information, but do not provide detailed information on funding sources, even though that is a subject of great interest to many literacy agencies. Further, there are many types of forms (student interview forms, assessment instruments, etc.) which would be of use to literacy providers. Funding information and sample forms can certainly be obtained from other sources, but if there were a cost-effective mechanism for disseminating these relatively static types of information, clearinghouses could enhance the level of service provided to their users.

Lastly, the need for increased communication among providers (identified by 48% of the literacy providers surveyed as necessary to provide quality instruction to students) is largely untreated by the clearinghouse organizations. Referrals are useful in this matter, and directories are published by some service organizations, but time zone differences and the cost of conferences remain a problem for organizations which are locally organized and extremely cost-conscious. Currently, there is no centrally managed, 24-hour bulletin board (for either user- or center-supplied announcements) available to <u>all</u> literacy providers. Further, there is no electronic mail capability for personalized, time zone-independent transfer of information among literacy providers. In fact, research currently underway at the Institute for the Study of Adult Literacy in Pennsylvania would appear to support the indicated need for increased communication and the use of advanced technology to maintain currentness in the literacy field. The Institute is currently planning the development of an information and technology laboratory. The laboratory and its technological services, however, will not be available for another two years.

3.4 <u>Conclusion</u>

Currently, there is no electronic system which is designed for the express purpose of disseminating all types of information pertinent to literacy providers. Various service organizations collect, maintain, and provide the literacy-specific information. Some of the organizations maintain and provide certain <u>types</u> of information electronically (specifically bibliographic abstracts), but in each case, the information resides with a commercial vendor; usage involves startup fees and/or annual fees as well as per-search charges. There are also a number of commercial service

organizations (e.g., BRS, DIALOG, NEXIS, COMPUSERVE, Prodigy, America-Online) which provide information on almost any subject; these are also on a membership and cost-for-service basis (a sample of costs for this type of organization is shown in Figure 4, Cost-For-Service Organizations). These electronic systems are neither specifically targeted nor low cost. Efficient database searching on such systems generally requires several hours of specialized training. Further, none of the available systems include such frequently requested information as assessment forms, funding information, legislative information, and similar current news. There is no system which provides 24-hour electronic access to frequently requested information. Lastly, among all organizations and systems, there are neither bulletin board nor electronic mail capabilities. Literacy providers, attempting to maintain contact with peers and support organizations, could significantly benefit from these simple, but currently unaddressed, services.

Service	Cost
DIALOG	$35.00 annual fee $1.10 per minute to search $0.40 per printed record
COMPUSERVE	$35.00 setup fee (purchase of software) $96.00 annual fee OR $12.00 annual fee plus $6.30 to $22.80 per hour
PRODIGY	$25.00 setup fee (purchase of software) $108.00 to $156.00 annual fee

SAMPLE COSTS FOR COMMERCIAL SERVICES

FIGURE 4

4. PROTOTYPE EICS

4.1 Overview

To demonstrate the possibilities of an EICS in a tangible way, COMSIS developed a prototype. The prototype EICS comprises the following components:

- An on-line user's guide which provides users the ability to print the guide at their own locations for future reference;
- A bulletin board for display of recent research and information such as pending legislation, newsworthy items, calendars of events, etc.;
- Searchable databases containing information on computer training materials, funding sources, related organizations, etc.;
- An electronic mail feature for communication among users and agencies; and
- A selection of forms which can be printed at the user's location.

This generic and flexible EICS runs on an IBM compatible personal computer. It can be accessed over standard telephone lines via modem. Minimum equipment needs and instructions are delineated in the user's guide (see Appendix C). Most of the system is application-independent; little, if any, programming is required to establish a new application. For each application, application-specific definition files are developed. These are text files which provide the EICS with application-specific information (such as the menu items to display, etc.). Procedures are provided for setting up new applications or modifying existing applications (see Appendix D).

4.2 Telecommunications

The Phase I prototype EICS runs on a standalone IBM compatible personal computer connected to standard telephone lines via a modem. Users can log in with 300 - 2400 baud modems. This configuration demonstrates the complete capabilities of an EICS, but on a small scale. The prototype system supports a single user and relies strictly on the local telephone company for telecommunications support. The system can be accessed from anywhere in the country, but costs the user the charge for the call. The EICS could be implemented on a PC-based network server to support multiple users while containing costs. A number of different scenarios which could be considered for handling

telecommunication charges, in a cost-effective but fair manner, include:

- Employing the services of a Wide Area Network provider such as Telenet;
- Establishing a 900-line number for which AT&T maintains accounts; or
- Establishing an 800-line number and providing access to the EICS at no cost to the user.

The telecommunications aspect of the Phase I prototype EICS is application-independent and, therefore, requires no changes when setting up a new application. This will remain true of the Phase II full EICS.

4.3 User Interface

The Phase I prototype EICS is line-oriented and operates on ASCII character input and output. This approach allows literacy providers with minimal equipment the same capabilities as those with more advanced equipment. The line-oriented approach will support IBM, IBM compatible, and Apple computers, as well as non-intelligent terminal equipment. This is an approach frequently employed by bulletin board systems, where the user base is unknown and equipment undeterminable. In the case of literacy providers, it has already been established that few organizations currently have anything more than very basic equipment and many organizations are only now in the process of acquiring computers. Hence, the simplified, line-oriented approach is sufficient and appropriate. The Phase II full EICS will continue to support the line-oriented system so that users with older equipment can still use the system, but will also incorporate more advanced features such as full-screen capabilities. This approach will provide users with features that better match the capabilities of their equipment, but will require more advanced equipment on the part of the EICS, for example, high-rate modems and graphics management software. Some restrictions will have to be enforced, such as pre-defining which full-screen protocols will be supported, as the range of potential user machine capabilities is wide.

As part of Phase II, a study will be conducted to determine the capabilities of users with advanced computer equipment, common protocols will be identified, and the system will be adapted to support popular capabilities. Users will have to identify the type of equipment they have when they log on the EICS. They may also have to acquire software to run on the local (terminal) machine, but will then receive an interface consistent with the type of equipment used. A more complex interface will require considerably higher telecommunication rates to ensure smooth screen operation,

so additional study to determine the equipment best suited to serve this need will be undertaken as well.

The Phase I prototype EICS is menu-driven. It is very flexible because it is designed around a dynamic-menu system in which menus are defined in text files invoked at run time. This means that changes to the menu definition files will go into effect the next time the given menu is invoked. The menu system can handle infinite levels of sub-menus. If a menu entry is a file to be listed, the contents of the file are listed to the screen. When a file is listed, users are prompted to control scrolling continuously or to stop at the bottom of every page. Users reviewing the information on screen will not have text scrolling off the screen. Users wishing to download entire files will not have to be present to repeatedly press a key to continue. If a menu entry is a sub-menu, the sub-menu is presented to the screen and controlled in exactly the same fashion as the previous menu screen. Users can page up and down within a menu to review all options before selecting one. Any main menu options, other than electronic mail and database searches, are menu systems. This, for example, is the case with the prototype EICS user's guide, bulletin board, and sample forms options. Missing or invalid options can be noted in menu definition files as "not available" and the corresponding menu option can be invalidated but still show on the screen for informative purposes, if such action is desired.

The present scheme for assigning user IDs encodes information such as the user's state in the ID. For the Phase I prototype EICS system, ID's must be pre-assigned. The Phase II full EICS will provide a capability to allow users to maintain their own accounts, should this be of interest for a given application. A screen will be provided to collect user information, the ID and password will be assigned, and the user will be responsible for changing and maintaining the password. This will be done in a manner similar to that used by common bulletin board systems.

4.4 On-line User's Guide

The Phase I prototype EICS on-line user's guide is a menu subsystem consisting of five chapters:

- Chapter 1 provides an introduction, a schedule of services, an explanation of the automatic logout feature and what to do in case the connection is lost, and a description of user responsibilities.
- Chapter 2 describes the equipment necessary to access the EICS.
- Chapter 3 notes that capturing information is the user's responsibility. This could change in the Phase II full EICS

if it is determined that providing session logs should be a system feature.

- Chapter 4 explains how to conduct searches of the databases.
- Chapter 5 provides details on how to access the EICS, the database, the bulletin board, the electronic mail, and the sample forms.

The EICS menu system runs according to text definition files. Therefore, adding, subtracting, or changing chapters in the guide is very simple. Some of the contents of the user's guide (the parts that apply to the application-independent aspects of the EICS) are generic and will not change among applications. Other parts, however, contain details about the specific application and must be application-specific. The prototype EICS consists of simple text files, so while editing is very straightforward, each chapter must be edited when a new application is established. The Phase II full EICS will have the generic aspects of the user's guide separated from the application-specific parts so that setting up the guide for a new application requires writing only the application-specific sections (such as examples). A utility will merge the formatted application-specific information with the application-independent guide to create the new application's user guide with a minimum amount of effort on the part of the developer.

4.5 Bulletin Board

The Phase I prototype EICS bulletin board is a menu subsystem providing access to pre-determined news bulletins. There is a pre-set maximum number of bulletins which the system will handle (this information is defined per application in the control information text file), but there is no maximum length enforced for any bulletin. Hence, a single bulletin file may contain multiple articles. This limit on bulletin entries will be re-evaluated in Phase II to determine the usefulness of allowing unlimited bulletin entries.

4.6 Database Search

The Phase I prototype EICS database search capability has specialized search routines which allow users to search multiple databases on a variety of fields.

If there is only one database available for searching, the name of the database should be included in the main menu such that invoking the database search option operates on the named database. If there is more than one database name available for searching, a database sub-menu can be established such that the option on the main menu reads "Database search menu", and invoking that option results in a menu of database names and titles per the database sub-menu control file. Selecting any of the options at that point

invokes the database search routines to operate on the named database.

When the search routines are invoked for a database, the user is presented with a menu of fields which are available for searching. This menu is dynamic and runs from control fields stored in the data dictionary, hence it is specific to the named database. Control information which is read from the database dictionary includes:

- Which fields are used to define searches (in-house searches may have additional fields defined which will not show in the menu for telephone callers);
- Prompts for each search field;
- Help text for each search field;
- Which field is the controlling field (for example, TITLE would be the controlling field for a library database); and
- Which fields should be printed when "full information" is requested.

The fact that this information is read from a database dictionary means that the information can be changed dynamically. For example, while the system is running but not accessing the database, the list of fields to print could be altered. The next time a full-information listing is requested, the new list of fields to print will be used. Thus, changes made to the control information take effect on the next access to the routine which uses the control information. Even the menu of searchable fields is dynamic. This information is read from the dictionary when the search routine is first invoked, but is re-read (hence, will display any changes made) upon every entry into the database search routines. In the Phase I prototype EICS, the last search field specified is assumed to be a text field requiring a full-text search. This approach will be re-evaluated during Phase II to ascertain if there is a more generic manner of handling the dynamic search menus while still being able to identify which fields are text and require special searching algorithms. Fields from the list of fields to search can be specified by exact number or by ranges. Ranges entered at a prompt are expanded to an inclusive list of all numbers between the endpoints.

When the fields on which to restrict a search have been selected, the user specifies a search criterion for each field. This can be done by:

- Specifying a list of values. In the prototype EICS, if the field being processed is the key field, then a list of values can be entered, and no search of the database is

actually performed for this field, a search is performed to get a list of keys; if one has just been entered, there is no need to search.) This manner of specifying search restrictions will be generalized in Phase II to include any field for which entering distinct values makes sense. For example, in a materials database, entering a list of titles is a valid search criteria, even though title would not be the key field for the database.

- Defining a logical expression. The EICS allows the specification of keywords in logical expressions of any level of nesting. Words which are expected to show up in a chosen field can be specified in a manner such as Keyword1 .OR. Keyword2 .OR. Keyword3, etc. This type of search can be time-consuming when applied to a text field, particularly if the text field is long (e.g., bibliographic abstracts). For this reason, if a text field is one of those chosen for a search, it will be the last field evaluated. This approach ensures that only the text for the smallest number of records is actually searched using the keywords specified. (This manner of specifying search criteria is valid for any field which is not a key field; for key fields, this manner of specifying search criteria is meaningless.)

When the search is completed, the user can opt to review just control field information (title, for example, in the case of a bibliographic database) or full information. Items returned as the result of a search are specified by their numbers in the result set (ranges of numbers can be specified as well). In the Phase II full EICS, the ordering facility will allow users to additionally specify items to order by the same numbers.

4.7 Electronic Mail

The prototype EICS provides the essentials of electronic mail capabilities. Users can send, read, and delete messages. The mail system is menu driven at the top level, allowing the user to select an activity.

If 'send' is selected, the user is prompted for the user ID of the addressee and a subject for the message, and is provided with an elementary editing facility for entering the text of the message. Like the rest of the EICS, the mail editor is line-oriented. It is very rudimentary, i.e., text is entered on a line-by-line basis and no backtracking is allowed. In Phase II, commercial editors will be evaluated as potential replacements for the existing mail editor. The Phase II full EICS will also provide full-page editing for those users whose equipment will handle increased terminal function.

If 'read' is selected, the user is provided with a list of available message numbers. When the user enters a number, the corresponding message is displayed, using the same scrolling mechanism as the bulletin board. The Phase II full EICS will provide forward and backward scrolling within a message.

If 'delete' is selected, the user is provided with a list of available message numbers. The user can enter the number(s) of the message(s) to delete.

The system also provides a mechanism for identifying other users to whom mail can be sent. In the prototype EICS, access to the electronic mail facility is controlled by information encoded in the user ID. A group of users can be identified as eligible to use the mail facility by specifying a portion of the user ID in the application control file. Any users not specifically designated as eligible are, by default, ineligible. Access control may be desirable to control the work load on the electronic mail system. In Phase II, the eligibility scheme will be re-evaluated to identify a manner by which arbitrary groupings may be defined, such that members of a particular group could broadcast within the group. The issue of broadcasting among groups will be investigated and the capability will be added if it is feasible and useful. Separate eligibility criteria could be established for broadcasting capability.

4.8 Phase II Additions

The Phase I prototype demonstrates the essential capabilities of a functional EICS for literacy providers. There are a number of useful features, however, that an operational system should have that are not present in this prototype. These features are described below. The development of these features will be undertaken in Phase II.

4.8.1 Account Tracking

A usage tracking feature will be added which monitors and reports on system usage so that the usefulness and performance of EICS features can be evaluated. This feature will allow EICS staff to identify areas of the system which could benefit from additional attention. System statistics will be monitored as well, so that the performance of the overall system can be fine-tuned. A study will be undertaken to determine the usefulness of providing an on-line process to report similar information to the users.

4.8.2 On-Line Ordering

The prototype EICS only provides information on the availability and location of materials of interest. In Phase II, a feature will be added to allow users to place orders for materials which they find as a result of their searches. This feature is primarily

intended as an addendum to the database search section of the EICS.

4.8.3 On-Line Critique Submission

The prototype EICS lists full information for all records in the database retrieved in response to a user search. In Phase II, a feature will be added which will allow users to submit critiques of materials and comment on the results of database searches. This will be linked with the display of the search results so that the same numbering system used to display the results of searches can be used for submitting comments and critiques.

4.8.4 User Account Maintenance

The prototype EICS requires that user ID's and passwords be assigned by EICS staff. A "user maintenance" feature will be added such that users can maintain their own accounts. First-time users will be prompted for information such as name, address, preferred password, etc. A user ID will be automatically assigned. The system will support some or all users changing the information in their user profiles or changing their password, etc. This feature will support both line-oriented and full-screen interfaces, depending on the capabilities of the user. This feature will also allow users to request changes which they themselves are not authorized to make (such as additional privileges, etc.).

4.8.5 Inclusion of Existing Databases

The prototype EICS supports searching on databases defined in the Revelation database management system because Revelation allows searching on text fields and also allows the re-direction of input and output from and to the serial port of the computer. The Phase II full EICS will provide a mechanism for tying into existing database systems and programs which can be executed from a command line (e.g., Paradox, DBase, etc.). Once the database program has been invoked, it can be operated normally. This feature will be restricted, however, by the capabilities of the database system which is invoked. If a given database application is completely screen-oriented (i.e., output cannot be re-directed to the serial port), that application would be available only to in-house EICS users.

4.8.6 Session Logs

The prototype EICS places the responsibility for capturing all or part of a session on the user. Users can do this by relying on the features provided with their communications packages. In Phase II, a feature will be added which provides the user with the opportunity to record the session, as it unfolds, for later reference. If it is deemed useful, turning the session recording capability on and off can be provided as an option on the main

menu. This will allow users to selectively log specific portions of their sessions, as well as the entire session.

4.9 Application to Other Domains

There are two distinct aspects to the prototype EICS:

- That part which is application-independent; and
- That part which is application-specific.

The prototype EICS has been developed to show capabilities of interest to literacy providers, but these can be easily applied to other domains such as secondary education, scholarship and higher education providers, education research, etc. In each case, an analysis must be done of the needs of the anticipated user audience. Once the analysis has been performed, tailoring the EICS is a straightforward procedure which requires no programming. The steps involved include:

- The creation of required directories and menu (text) files;
- The identification and development of required subsidiary (text) files;
- The recording of the system control data; and
- The identification and development of supporting databases and listings.

The procedures for setting up a new application are provided in Appendix D.

4.10 Conclusion

The EICS is a user-friendly system designed for persons with limited computer experience. It can be accessed over standard telephone lines. The software can be used for electronic information and communication services in any field of study or research. Only minimal changes would be necessary to tailor the software to any particular field. New applications can be established, without programming, by defining system parameters in text files and database dictionary fields. As with any application, initial analysis is necessary to identify the content and format of the information to be disseminated, and familiarity with the DBMS being used is assumed.

The prototype EICS is a functional system which demonstrates the capabilities of an EICS on a small scale. It is usable in current form (by both in-house and remote users), readily adaptable to different domains, and expandable (e.g., the inclusion of new services). The proposed Phase II features offer additional

capabilities and enhancements. Maintaining an EICS would primarily involve ensuring that all news items are updated frequently, ensuring that new materials submitted electronically are processed in a timely fashion, and monitoring the system statistics. Depending on the telecommunications selected, maintenance of the equipment would be minimal. The low maintenance ensures that the cost to users can be kept to a minimum. Depending on an organization's budget, the EICS might be provided at no cost to the user. This would involve the supporting organization absorbing the cost of the telecommunications support.

5. PROTOTYPE EICS DEMONSTRATION

The Phase I prototype EICS was demonstrated to representatives from the Department of Education and various literacy agencies on Thursday, April 2, 1992. A history of the project and findings was presented, the EICS was described conceptually, then the system was demonstrated.

The demonstration began with an examination of each feature of the system on a standalone machine. As each feature was shown, details were explained and anticipated Phase II enhancements were introduced. At the conclusion of that session, the system was accessed over telephone lines to demonstrate both the communications aspect of the system and the differences which can be enforced between in-house users and the general public. At the conclusion of the demonstration, additional features proposed as Phase II enhancements were described and attendees were invited to try the system. Comments and questions from attendees were entertained throughout the meeting, and the floor was opened for discussion at the conclusion of the meeting.

The reaction to the system was positive with discussion centering around technical and staffing issues involved in establishing and maintaining an EICS, implications of anticipated enhancements, availability of EICS software, and scenarios whereby literacy providers would get most effective use from such a system. The consensus was that the EICS was both simple and useful.

6.0 PROJECT CONCLUSIONS

The prototype EICS provides suggested solutions to specific needs of literacy providers as identified in the needs assessment and survey. The needs assessment identified that many literacy providers have electronic capabilities (albeit basic ones), but that the providers are not using their equipment for communication with either electronic information systems or each other. In spite of this, 48% of the respondents indicated that they considered improved communication critical to providing quality instruction to students. Interest in a centralized EICS was expressed as being dependent on ease of use and cost.

The survey of a representative sample of existing information organizations and electronic capabilities revealed that, while there are many effective clearinghouse organizations, they are primarily telephone and mail-oriented, hence access is restricted to normal business hours (or the several day delay of the postal service). This puts literacy providers who are in different time zones at a disadvantage. There are very few announcement mechanisms (such as dedicated voice-message telephone lines or electronic bulletin boards) available to literacy providers for 24-hour dissemination of time-critical or static general information.

The prototype EICS addresses these needs by showing how both information and communication services can be provided. The EICS is comprised of:

- Telecommunications support;
- A flexible menu system;
- A database search system; and
- An electronic mail facility.

It can be easily configured for any area of interest, as it is defined in text files and database dictionary entries. The modular design allows pieces of the system to be used independent of each other, and built-in controls allow system maintainers to define different access capabilities for different groups of users. EICS use requires minimal computer equipment and training. Each of the existing features can be enhanced to provide improved capability, whenever such need is determined, and additional features can be added with little impact to present capabilities. Additional features identified to be of interest include:

- Monitoring of user accounts;
- Electronic submission of information and orders;
- Maintenance of accounts by users;
- Inclusion of existing agency database applications; and
- Production of session logs for retention of information.

A system such as the prototype EICS would increase communication between literacy providers and literacy agencies, and among literacy providers independent of time zone and schedules. Such an information dissemination tool would reduce agency staff involvement with repetitive information requests, thus providing more time for other services. Further, defining an application is a straightforward procedure, and maintaining the system primarily involves ensuring that information is current and monitoring the incoming information. Such a system would improve the quality of services provided by literacy agencies to literacy providers.

APPENDIX A

NEEDS ASSESSMENT INSTRUMENT AND COVER LETTER

COMSIS

8737 COLESVILLE ROAD, SUITE 1100
SILVER SPRING, MARYLAND 20910
(301) 588-0800
FAX: (301) 588-5922

September 24, 1991

Dear Colleague:

Under a grant from the U.S. Department of Education, COMSIS is performing an assessment of the information needs of providers of literacy services. With this assessment, we are trying to determine if some of their information needs could be met through the use of an electronic information and communication system (EICS). In support of this effort, we are asking selected providers of literacy services a few questions regarding their information needs and their ability to use an EICS, if one existed.

We identified your organization as a provider of literacy services that might benefit from an EICS. Accordingly, we have enclosed a list of questions that would help us answer several basic questions. Specifically,--

- would an EICS devoted to the needs of providers of literacy services be of benefit to your organization;
- what information should an EICS contain to be of benefit to your organization; and
- does your organization have the capability to access an EICS if one existed.

I hope that you will be able to take a few minutes from your day to answer the questions included on the enclosed list and return it to us in the enclosed postage-paid envelope. Should you have any questions or would like to know more about our assessment, please do not hesitate to call me or Ms. Maybelle Marckwardt at (301) 588-0800.

Thank you for your cooperation.

Sincerely,

John B. Ippolito
Senior Vice President

COMSIS
8737 Colesville Rd, Suite 1100, Silver Spring, MD 20910
Telephone (301) 588-0800 Fax (301) 588-5922

NEEDS ASSESSMENT

1. Describe your type of literacy program. If you have a brochure describing your services, please attach a copy.

   _____
   _____
   _____

2. Are you affiliated with a specific group? Yes ___ No ___

   Name of group to which affiliated. _____

3. Can you dial into other information systems? Yes ___ No ___

4. If yes, please describe how this is accomplished. _____

   _____

5. If yes, please list the name(s) of the system(s)? _____

   _____

6. What type of information do you need to provide quality instruction to your students?

Standardized Tests	___	Training Materials	___
Computer Software - Instructional Analysis	___	Training Material Critique	___
Greater Interaction with Other Organizations	___	Topical Publications	___
Other Databases	___	Other _____	

7. Are you familiar with using computers and communication packages? Yes ___ No ___

8. Do you have access to computer equipment? Yes ___ No ___

9. Please describe the equipment in general terms (e.g., IBM PC with a modem or Apple with a modem).

   _____
   _____
   _____

10. Do you use it to communicate with other information systems? Yes ___ No ___

11. Would you be interested in access to an Electronic Information Communication System? Yes __No__

Please return form to COMSIS c/o Mrs. Marckwardt

October 22, 1991

APPENDIX B

EXISTING INFORMATION CENTERS/SYSTEMS

APPENDIX B

EXISTING INFORMATION CENTERS/SYSTEMS

1. Outreach and Technical Assistance Network (OTAN)

The OTAN is managed by a private company under contract to the State of California. Federal Adult Education Act (AEA) Section 353 funds (teacher training and special projects) are channeled through the state to cover the technical maintenance costs for the network. The electronic system itself resides with a commercial database services vendor. The system has existed for two years. The program was funded by and for the State of California. The use of a commercial Wide Area Network (WAN), however, provides access to users nationwide via a local telephone call. Currently, the OTAN has 350 registered users from 48 states. The OTAN is only one component of an outreach program; other features of the program include:

- Statewide staff development;
- Outreach programs to unfunded counties; and
- An archive of both electronic resources and library material (historical references).

Target clientele comprise State of California providers of Adult Basic Education (ABE). Clientele needs include access to up-to-date information on training and staff development, materials, and program assistance.

Along with its outreach programs, the OTAN provides access to a database of educational literature. This system currently resides with a commercial database service vendor and is accessible nationwide via a WAN. Users must register with the network and pay $99 for a copy of Macintosh or MS-DOS (MS Windows) software to run on the local machine (the access system is icon-based). Users pay $14 per month for up to one hour of service and $12 per hour (in one-minute increments) beyond the initial hour.

2. Educational Resources Information Center (ERIC)

The ERIC is managed by the U.S. Department of Education, Office of Educational Research and Improvement (OERI). The ERIC is a nationwide information network consisting of 16 area-specific clearinghouses, a few adjunct clearinghouses, and four support components. It is designed to provide users with ready access to educational literature. Information from local, State, Federal, and international sources is collected, analyzed, and distributed. The ERIC maintains the largest education database in the world. It

contains nearly 700,000 bibliographic records of documents and journal articles; approximately 2,600 records are added monthly. Papers, conference proceedings, literature reviews, and curriculum materials, along with articles from nearly 800 education-related journals, are indexed and abstracted for entry into the ERIC database. Documents selected for the database are cataloged, indexed, abstracted, and announced in Resources in Education (RIE), ERIC's monthly journal. The full text of most documents announced by ERIC is available in microfiche or paper copy from the ERIC Document Reproduction Service (EDRS). The ERIC offers a wide range of other services, including:

- Providing free reference and referral services to the public through its network of clearinghouses and its toll-free number (staff are available to provide publications, answer questions, locate hard-to-find documents, and refer callers to other appropriate information sources);
- Providing conference support, including exhibiting, presenting papers, providing speakers, and disseminating materials;
- Conducting training programs, seminars, and workshops; and
- Developing collaborative programs, such as joint conferences, research, and publications, with organizations.

The following four ERIC support components produce, publish, and disseminate ERIC products and services:

- ACCESS ERIC - Coordinates ERIC's outreach, dissemination, and system-wide activities; develops new ERIC publications; and provides reference and referral services toll-free nationwide;
- ERIC Document Reproduction Service - Produces and sells microfiche and paper copies of documents announced in RIE;
- ERIC Processing and Reference Facility - Coordinates document processing and database-building activities; performs acquisition, lexicographic, and reference functions; and maintains system-wide quality control standards; and
- Oryx Press - Publishes several ERIC publications.

Target clientele comprise a wide spectrum of users including teachers, administrators and school boards, students, librarians and information specialists, researchers and professors, parents and the general public, professional organizations, civil servants, and journalists. Clientele needs include obtaining the latest information on new and significant educational developments such as

pre- and in-service training, classroom techniques and materials, and education management tools and practices; obtaining up-to-date information on research and practice, verifying research results, and avoiding duplication of research activities; assisting local and State agencies in planning educational programs, including understanding new legislation on education and the latest research pertaining to the development of budgets, preparation of statistical reports, and development of legislation and policy; building personalized, low-cost education libraries by compiling bibliographies on specific educational topics and obtaining full-text research reports, either for private use or for local information centers; and learning about continuing adult education.

ERIC provides on-line and CD-ROM access to the ERIC database. The database system currently resides with a commercial database services vendor. Access can be gained via the services of BRS Information Technologies, DIALOG Information Services, or ORBIT Search Service. Users can identify articles (concurrently indexed under different subject terms) with the use of Boolean operators (and, or, and not). Searches can be limited to fields such as author, publication date, subject, document type, etc.

ERIC publications range in cost up to $3.20 per 25 pages plus shipping. Ready-made searches cost $10, and specialized searches by ERIC staff cost $15 plus $.10 per citation retrieved. The costs of on-line and CD-ROM searches are dependent on fees determined by vendors. The vendors generally require subscriptions and annual licensing fees.

The minimum hardware required for on-line and CD-ROM searches is a micro-computer and either a modem or a CD-ROM drive. Users may request an on-line vendor to develop a search strategy based on the user's criteria; developing efficient search strategies (to contain searching costs) may require several hours of specialized instruction. Users receive an annotated bibliography and can order full documents through the ERIC support components. The ERIC also accepts document submissions. Submitters send two copies of the document and a release form to the ERIC, where it is reviewed and evaluated.

3. (ERIC) National Clearinghouse on Literacy Education (NCLE)

The NCLE is managed by the U.S. Department of Education, OERI. The NCLE is an adjunct ERIC clearinghouse, with an emphasis on adult literacy. It has access to the complete ERIC database for providing literacy education-specific assistance. Target clientele comprise practitioners, policy makers, and corporate planners (e.g., for partner's projects). Clientele needs include acquiring up-to-date publications, finding information providing educational services for limited English-speaking adults, finding information on legislative action toward adult literacy, keeping up-to-date

with current research in the field of adult literacy for limited English speakers, and identifying available services.

NCLE produces and disseminates newsletters, digests, minibibliographies, etc. It also provides lists of providers of services to limited English speaking adults organized by geographical region, type of service, type of learner, etc. from an in-house database. Copies of a variety of ready-made searches of the ERIC database, which are specifically of interest to literacy providers, are also provided. No on-line search capabilities distinct from the ERIC are provided by the NCLE. The NCLE publications cost up to $15, and the ready-made ERIC search listings range in cost from $5 to $10.

4. National Institute for Literacy (NIL)

The Institute is managed by an interagency group comprising the Secretaries of Education, Labor, and Health and Human Services. This group provides policy direction and guidance regarding priorities for the Institute's activities. The Institute is also responsible to the NIL Advisory Board (ten individuals appointed by the President, with the advice and consent of the Senate). This group makes recommendations concerning the appointment of the Director and staff of the Institute, provides independent advice on the operation of the Institute, and receives reports from the interagency group and the Director. The Institute was authorized by the National Literacy Act of 1991 to enhance the national effort to eliminate the problem of illiteracy by the year 2000 by improving research and disseminating information through a national research center.

Target clientele are Federal, State, and local agencies, literacy programs throughout the U.S., literacy providers and volunteers, and State Literacy Resource Centers. Clientele needs include the delivery of literacy services, the improvement of literacy services and policies, assistance with literacy programs (e.g., to improve the effectiveness and number of programs), and the acquisition of information about new methodologies, techniques, materials, performance measures, and reporting requirements.

The Institute assists other Federal agencies to improve literacy services; conducts basic and applied research and demonstrations on literacy; provides program assistance, training, and technical assistance for literacy programs throughout the U.S.; assists Federal, State, and local agencies in the development, implementation, and evaluation of policy with respect to literacy (by establishing a national database and providing technical and policy assistance); collects and disseminates information; reviews and makes recommendations regarding reporting requirements and performance measurements; awards fellowships for Literacy Leader Fellows for individuals engaged in activities to advance adult education and literacy; assists Federal agencies in setting

specific objectives and strategies for eliminating illiteracy; and assists the agencies in developing ways to measure progress. There are no electronic means for disseminating the various types of information collected by the Institute. There are no costs associated with the services of the Institute. In general, Institute services are funded by the Institute and, in fact, may involve providing funding for the client.

5. The Clearinghouse on Adult Education and Literacy (CAEL)

The CAEL is managed by the Division of Adult Education and Literacy of the Office of Vocational and Adult Education. The CAEL links the adult education community with existing resources in adult education, and provides information which deals with State-administered adult education programs funded under the Adult Education Act, as amended by the National Literacy Act of 1991. The CAEL also provides resources which support adult education activities. The clearinghouse provides information and referrals on the following topics:

- Adult Secondary Education;
- Workplace Literacy;
- Corrections Education;
- Computer Assisted Instruction;
- Adults with Disabilities/Special Learning Needs;
- English as a Second Language;
- Family Literacy;
- Older Persons;
- Staff Development;
- Volunteers;
- Homelessness;
- Adult Education Programs; and
- Literacy Programs.

Target clientele include Federal, State, and local agencies which provide basic skills services and literacy programs to the general public. Clientele needs include obtaining information on training techniques, programs and services available, human factors in literacy education, staff development, and obtaining related literacy materials.

The CAEL responds to requests for information, provides referral services, issues publications, and functions as a "broker" of information services by referring inquiries to appropriate information sources. Publications include the Adult Education Act, the National Literacy Act and Regulations, fact sheets on adult education, directories on various programs and resources, literacy materials, papers on selected adult education subjects, a guide to available AEA Section 353 resources, and a bibliography of all materials available from the clearinghouse. There are no costs associated with any of the publications or services.

6. Institute for the Study of Adult Literacy (ISAL)

The ISAL is managed by the Pennsylvania State University under a grant from the U.S. Department of Education. The ISAL is a research and development organization which is in its second contract year. It has no specific literacy provider clientele although it does provide reference services to callers. The ISAL is planning a library and a literacy technology laboratory. The technology laboratory will be another two years in development.

APPENDIX C

PROTOTYPE EICS USER'S GUIDE

APPENDIX C

U S E R ' S G U I D E

T O T H E

L I T E R A C Y P R O V I D E R ' S

E L E C T R O N I C I N F O R M A T I O N

A N D

C O M M U N I C A T I O N S Y S T E M

COMSIS Corporation
8737 Colesville Road
Silver Spring, Maryland 20910
(301) 588-0800

SECTION 1. INTRODUCTION

The Literacy Provider's Electronic Information and Communication System (EICS) provides access to an on-line copy of this guide, a searchable database, a bulletin board, and electronic mail.

This User's Guide is designed to assist users with the Literacy Provider's EICS. It includes specific instructions to access the system, the on-line guide, the database, and other electronic services. The schedule of services and the responsibilities of users are also included in this guide.

The Literacy Provider's EICS is menu driven and will prompt the user for information. Instructions and examples are given on the screen for most steps in the system. Help and further information screens are also available. You can read these screens by typing a ? and then pressing the <Enter> or <Return> key when this option is given.

After you review the User's Guide, should you need any assistance in using the GSA Security Information System, please call COMSIS at (301) 588-0800.

1.1 Schedule of Services

Users may access the system seven days a week, twenty-four hours a day.

1.2 Automatic Logouts

After every 5 minutes of inactivity, a warning message will appear asking if someone is still at the terminal. The message is displayed on the terminal along with a beep to attract attention.

If, after waiting fifteen minutes, there still has not been any user input, the system will assume that the user's terminal is unattended and will log the user off automatically. This is done to prevent users from monopolizing the system and locking out other potential users.

1.3 Loss of Connection

If the communications link between your terminal and the EICS should be lost (for example, if the phone is accidentally hung up), the system will log the user off and free the communication link that was being used.

A user who has been disconnected due to inactivity or communication link failure must redial and start a new session.

1.4 Responsibilities of Users

Users are responsible for setting up the computer (in good working condition and properly connected) as needed to interface with the Literacy Providers EICS (see SECTION 2).

Users are also responsible for the following.

- Closing their own files. The EICS cannot close them.
- Having enough disk space to save information being captured. The EICS cannot warn you if you are exhausting disk space.
- Having enough paper on the printer.
- Doublechecking input to make sure it conforms with the system specifications.
- Using the correct strategy and keywords for searching the databases.

SECTION 2. EQUIPMENT NEEDED TO INTERFACE WITH THE LITERACY PROVIDER'S EICS

To interface with the Literacy Provider's EICS, users need the following equipment.

- A terminal: a dumb terminal, a "miniterminal" (TTY), or a (micro) computer. A dumb terminal may have a built-in modem or a port to which a modem is connected. A "miniterminal" has a built-in modem and printer. A (micro)computer requires emulation/communications software and a serial port interface to connect to the modem.

- A modem: a direct connect modem or an acoustic coupler. A direct connect modem has a modular jack with or without autodial capability. It does not require a telephone piece. An acoustic coupler requires a telephone piece. The EICS accepts an operating speed of 300 baud (30 characters are transmitted per second). The specifications for the modem are standard:

  8 bits (7 data, 1 stop), no parity (NONE), full duplex.

- A direct telephone line, preferably a line dedicated to the computer system being used to access the EICS. Data (information) flow is interrupted if another call comes through the same line.

- Computer disks, if the user wants to save (capture) the information searched for later use.

- Paper for printer.

Users are urged to consult with a computer dealer, or the technical person in charge of the computers in their office, on how to set up the computer environment (terminal, modem, printer) to access the EICS.

SECTION 3. HOW TO CAPTURE INFORMATION

It is up to the users to become familiar with their computer systems, specifically with the ways the communications package may be used to capture (download, save) information onto a disk and/or printer. The EICS cannot determine how you are capturing information. You are encouraged to read the manual for your emulation/communications software package and modem for directions on how to capture information/data.

SECTION 4. HOW TO CONDUCT A SEARCH

4.1 What Is a Computer Search?

A computer looks through the contents of a database to find the information for which the searcher asks. This process is called a search. The contents of the database could be textual records, numerical measurements, or coded information values.

The Literacy Provider's EICS allows searches of foundation and computer training databases. These contain such information as recently awarded grants and available computer training materials.

The foundation database is searchable by foundation name, state, and previous grants (a text field). The computer training database is searchable by subject area, title, instruction format, and content (a text field). A help screen is provided with each field to explain how to proceed.

4.2 Procedure for Retrieving Information

The searcher's first step is to develop a procedure for retrieving the desired information. This procedure is also called a search strategy. Instructions for developing a search strategy follow.

4.2.1 How to Develop a Search Strategy

- Write a concise statement of your problem or question.
- Make a list of terms that describe your topic.
- Combine the keywords in a search statement by using the logical operators .AND., .OR., or .NOT., or a combination of these operators. (A search statement is the word or group of words the user types on the terminal in response to a prompt from the computer monitor or screen.) How to do this in the EICS is explained below.

4.2.2 Search Logic

The keywords chosen by the searcher must be entered at the terminal in a logical manner so that the computer can perform the desired operations and retrieve relevant database records. The system that governs how these search terms must be entered is called "search logic." The search logic uses standard Boolean logical operators (i.e., the words .AND., .OR., and .NOT.) to tell the computer what relationships keywords must have with each other. Before entering the keywords at the terminal, it is a good idea to work out the strategy on paper. Note that the use of .OR. retrieves more records than the use of .AND.

4.2.3 Using the Logical Operators, .AND., .OR., and .NOT.

".OR." means that any one of the keywords connected by the word .OR. may appear in the records found by the search.

Example:

The search statement "adult education .OR. vocational training" will find all documents in which EITHER "adult education" OR "vocational training" appears in the appropriate field. (A field is a part of a database record, e.g., title, publishing organization, funding institution, amount funded, etc.)

".AND." means that ALL the keywords connected by the .AND. must appear in the records found by the search.

Example:

The statement "adult education .AND. ESL" will find all records in which BOTH "adult education" AND "ESL" appear in the appropriate field of the database record.

".NOT." must be used in a specific order. "Keyword X .NOT. keyword Y" means that only records that contain keyword X in the appropriate field but that do not contain keyword Y will be selected.

Example:

The statement "adult education .NOT. vocation training" will find only those records in which "adult education" appears but "vocational training" does not appear. The statement "vocational training .NOT. adult education" will find only those records in which "vocational training" appears and in which "adult education" does not appear.

4.2.4 Combining the Terms .AND., .OR., and .NOT.

In order to combine keywords in the same search statement by using .AND., .OR., and .NOT., the searcher should group terms within parentheses to assure the correct relationship between them. This procedure is called "nesting."

Example:

If a searcher is looking for documents pertaining to education in general and ESL, the following strategy could be used:

(adult education .OR. basic education .OR. basic skills .OR. literacy education) .AND. ESL

The search would find only the records which fit all of the specifications in the statement.

4.2.5 Searching Specific Fields

Title field

Searching in the title field is useful if one is looking for a specific course and one knows the approximate title. In that case, the easiest thing to do is to ask for the most unusual word in the title. The result will be a list of titles from which the searcher may choose the one that most closely corresponds to the title one has in mind.

Content field

It is possible to do a search of the content field of a course record, but this kind of search may take a long time. It is advisable only if one gets very few results from searching the other fields. The searcher combines keywords that relate to the topic by using the logical operators .AND., .OR., and/or .NOT., according to the instructions given above.

Foundation Name field

One can search for grants awarded by a specific organization by typing parts of the foundation's name in answer to the prompts in the foundation name option of the search menu. Directions appear in the foundation name help screen for entering both individual and multiple organizations.

.
.
.

Help Screens

Each field option on the search menu has one or more help screens at which the searcher can look by typing a "?" in response to the prompt. These help screens contain information on the particular field being searched.

SECTION 5. HOW TO ACCESS THE LITERACY PROVIDER'S EICS

The Literacy Provider's EICS is accessible using a modem by dialing 588-xxxx.

Once the connection has been established, the following initial sign-on screen appears.

```
**************************************************************

                        W E L C O M E

                          T O   T H E

                  L I T E R A C Y   P R O V I D E R ' S

              E L E C T R O N I C   I N F O R M A T I O N   S Y S T E M


          Please Enter Your User ID (? for Help):

**************************************************************
```

Enter your assigned user ID. The following prompt will appear at the bottom of the sign-on screen.

```
Please Enter Your Password:
```

Enter your assigned password. The system will then check that the user ID/password combination is valid.

If the combination is not valid, you will not be allowed to enter the system. Make sure you have entered the correct user ID and password. If you do not have an assigned ID/password, the system states that yours is invalid. Call the Literacy Providers EICS/COMSIS at (301) 588-0800 to request assistance.

If the combination is valid, you will continue to see the sign-on screen and a message is printed indicating the latest update of the Bulletin Board, as shown below.

```
**********************************************************************

                        W E L C O M E

                        T O   T H E

                L I T E R A C Y   P R O V I D E R ' S

            E L E C T R O N I C   I N F O R M A T I O N   S Y S T E M


          Please Enter Your User ID (? for Help):

          Please Enter Your Password:

       Last logged on 04/02/92 at 13:42:21

       The EICS Bulletin Board was last updated on 03/30/92.

     Press Enter to continue:

**********************************************************************
```

After pressing the <Enter> or <Return> key, optional short messages may be displayed; then the Main Menu will appear.

```
**********************************************************************

            Literacy Provider's EICS                    Page 1 of 1


                1.   User's Guide
                2.   Bulletin Board
                3.   Database Searches
                4.   Electronic Mail
                5.   Sample Forms
                *** End of menu ***

                Enter Selection ( or ? for other commands):

**********************************************************************
```

If you enter an X at this point you will log off the system and your phone line will be disconnected from the EICS.

Select the option you wish from this Main Menu. The contents of each option are described in the following sections.

5.1. User's Guide

Option 1 of the Main Menu allows you to view this guide by providing you with a menu of chapter names. The EICS User's Guide is provided in separate chapters to simplify downloading and maintenance. The name of each chapter is followed by the date the chapter was last updated. This lets you decide whether you have the most recent version of any given chapter. If a chapter has been modified, you can download just the revised chapter. Selecting a chapter will cause the text to scroll past the screen for on-screen review or downloading. The chapter you select is displayed 23 lines at a time. On line 24, you will be prompted to continue. You may select one of the following:

Y> 'Yes' to continue with the message;
N> 'No' to stop the message; or
C> 'Continue' the message without stopping until ((the end of the file.

If you want to stop the file listing at any time, you may press the BREAK key.

5.2 Bulletin Board

Option 2 of the Main Menu allows you to view the EICS bulletin board. The bulletin board is updated frequently. When you first logon the EICS, a message will inform you of the date of the most current bulletin board update. The bulletin board entries may be submenus or bulletins. Bulletin entries are followed by the date the entry was last updated. When you select an entry, the text will scroll past the screen for on-screen review or downloading, just as is done for the User's Guide.

5.3 Database Searches

Option 3 of the Main Menu allows you to select a database for searching. When you select this option, you will be provided with a menu of available databases. Selecting a database will cause the search module to be invoked with the specified database. A session of the search module is described below using the Foundations Database as an example. Similar screens and prompts would be provided for any database, but the content of the menus (which fields on which to search, etc.) would be different. The Foundations Database includes information on funding sources and the types of grants awarded recently. When you select the Foundations Database, you will see the following screen.

****

Search Selection

1) Foundation Name
2) State
3) Previous Grants
Q) Quit

Choose one or more of the categories above to enter criteria for a search. Enter the numbers of the desired categories separated by commas (i.e., 1 ,2, 5). (Q to quit)
>

****

Selecting Q will return you to the Main Menu screen.

Selecting any of the other options from this menu will result in a corresponding prompt message. All of the categories have help screens. After selecting a category, if you need additional help, enter ? and an individualized help screen for that category will appear.

After entering the search criteria, you will see:

****

Checking....Please wait...

****

Depending on the result of the search you will see one of the following messages:

****

a) No abstract was found for this search. Please redefine your search and try again. Press <Enter> to continue.

****

(Pressing <Enter> returns you to the main search menu.)
or

****

b) Would you like to
A) View the foundation names,
B) View full information for some or all of the foundations,
C) Perform a different search, or
D) Return to the main menu?

****

C-13

At this point, you have the option of viewing the list of records generated by the search, viewing full information for any or all of the records or, if the search resulted in too large a selection of records, you may choose to redefine the search.

If option A or B is chosen, the menu for controlling the display will appear (see below). If option C is selected, you will be returned to the search menu for selecting a different search strategy. If option D is selected, you will be returned to the Main Menu.

Before viewing the records, you will be asked the following question.

****

Would you like the text to:
    A) Scroll 20 lines at a time, or
    B) Write continuously?
    Q) Quit

>
****

This menu allows users with paper terminals to receive a continuous printout of lists and text, making it unnecessary to keep pressing <RETURN> throughout the list. At the same time, the option exists for users with monitor screens to show only 20 lines on one screen at a time, so that the information does not scroll off the screen too quickly.

If you selected to see the names of the foundations, the records will be displayed as shown below, in a numbered list. (Note: Take note of the numbers of the records in which you are interested as you may wish to refer to these numbers later.)

****

Foundation #1,
        The Victoria Foundation

    Foundation #2,
        The Chatlos Foundation, Inc.

    Foundation #3,
        The Morris and Gwendolyn Cafritz Foundation
    .
    .
    .

****

If you selected to view full information about some or all of the records, the following screen will appear.

```
**********************************************************************

Enter the numbers of the foundations you wish to see, separated by
commas.  Ranges may be specified by typing a hyphen between two
numbers (i.e., 3,6-9,12). To see information for all foundations,
enter the word 'ALL'.
>2
**********************************************************************

Record numbers and ranges should be specified in ascending order.
Whichever records you select will be displayed in the following
format.

**********************************************************************

Foundation #2
Location:           FL
Name:               The Chatlos Foundation, Inc.
Address:            P.O. Box 915048
                    Longwood, FL  32791-5048
Giving limits:      No support for the arts.  No grants to
                    individuals, or for seed money, deficit
                    financing, building or endowment funds,
                    research, or conferences; no loans.
Previous grants:    Laubach Literacy International, Syracuse, NY,
                    $10,000, 1989.  For Frank C. Laubach Heritage
                    Collection Library.
Previous amount:    $10,000
# of grants:       1

End of list -- press ENTER to continue...
>
**********************************************************************
```

After you have viewed the requested records, you will be returned to the menu which lets you decide whether to perform another search, view full information for additional records, or return to the search menu.

5.4 Electronic Mail

Option 4 of the Main Menu allows you to use the electronic mail facility. The electronic mail system allows you to send messages to the sponsoring organization or to other users. Each line length is restricted to 65 characters per line, but there is no limit on the total length of the message.

Upon selecting the Electronic Mail option, the following menu will appear.

```
**********************************************************************

            EICS ELECTRONIC MAIL SYSTEM

              1. READ YOUR MAIL
              2. SEND MAIL
              3. DELETE MESSAGES
              X. EXIT THE ELECTRONIC MAIL SYSTEM

              Enter Number of Your Selection (? for Help):

**********************************************************************
```

After selecting Option 1, "Read Your Mail", from the electronic mail menu, you will be presented with a list of message numbers for the messages sent to you. If there are no messages, the following line will be printed.

```
                No Messages for <User ID>
```

where <User ID> is your user ID.

However, if you are presented with a list of message numbers, you will be asked to enter one of the numbers. Type the number of the message you want to read and press carriage return. When you select an entry, the text will scroll past the screen for on-screen review or downloading, just as is done for the User's Guide. If you want to stop the message listing at any time, you may press the BREAK key. The following is an example of how a message is read.

```
**********************************************************************

                    EICS ELECTRONIC MAIL SYSTEM

              1. READ YOUR MAIL
              2. SEND MAIL
              3. DELETE MESSAGES
              X. EXIT THE ELECTRONIC MAIL SYSTEM

              Enter Number of Your Selection (? for Help): 1

**********************************************************************

**********************************************************************

              ID Numbers for Your Messages:

              3    6    8

              Enter the Message Number (or Enter to Exit): 6
**********************************************************************
```

< Message 6 will then be displayed >

****

To: <User ID>
From: COMSIS
Date: 03/31/92
Topic: A SAMPLE MESSAGE

This is an example of a message you might receive through the electronic mail system from COMSIS. These messages might inform you of upcoming events, respond to your comments and questions, and keep you current on items of interest.

End of message, Press Enter to continue:

****

To send mail, select option 2 on the electronic mail menu. After selecting option 2, "Send Mail", you will be prompted for the topic of your message. The topic line cannot exceed 30 characters. After entering the topic of the message, you will receive some short instructions for submitting a comment, a ruler line to show the 65 character limit (the maximum line length), then the current line number (1) followed by a colon. Type in your message starting on this line.

When entering a message, you may use the backspace or the delete key on your terminal to delete one character at a time. Should you wish to delete an entire line, press the BREAK key; the cursor will move to a new line, deleting the one it was on when the BREAK key was pressed.

When you finish your message, press carriage return at the beginning of a line to finish and send the message. An example of a message being sent follows.

****

Topic? (30 Chars maximum): Sample Message
Enter text, 65 chars/line max. Enter an empty line to stop.
----!----!----!----!----!----!----!----!----!----!----!----!----!
1: This is an example of how you would send a message to COMSIS.
2: The text you enter here is sent to COMSIS along with the date
3: and your user ID so that COMSIS can respond to any questions
4: in a timely manner.

Message Sent.

Press Enter to continue:
****

After the message is sent, you are returned to the electronic mail menu. You may then opt for sending another message, reading a message, erasing a message, or exiting the electronic mail. Enter an X at the electronic mail menu prompt to return to the Main Menu.

5.5 Sample Forms

Option 5 of the Main Menu allows you to review and download sample forms. When you select this option, you will be provided with a menu of available forms. Selecting a form will cause the text to scroll past the screen for on-screen review or downloading. When you select an entry, the text will scroll past the screen for on-screen review or downloading, just as is done for the User's Guide. If you want to stop the message listing at any time, you may press the BREAK key.

APPENDIX D

PROCEDURES FOR SETTING UP A NEW APPLICATION

APPENDIX D

PROCEDURES FOR SETTING UP A NEW APPLICATION

NOTE: The information below assumes that all system parts exist (i.e., user's guide, bulletin board, electronic mail, and database search). This is not actually required. An application may comprise any combination of the possible parts.

REQUIRED DIRECTORIES

Each application requires that the following logical directories be identified and created, if necessary (they may be physically the same directory):

MainDir - directory where EICS system data files are kept;
MenuDir - SUB directory used for storing dynamenu files;
EMailDir - SUB directory used for storing mail-related files;
TextDir - SUB directory used for storing all text display files; and
WorkDir - directory used for scratch files (current).

REQUIRED FILES

Each application requires that the following (logical) files exist in the specified directories:

MainDir:

Welcome1Text - file in which initial screen form is given;
Welcome2Text - file in which short logon messages are given;
UserDataFileNm - file containing user ID information; and
SrchDwnFileNm - file of text to display if search is down.

MenuDir:

MainMenuFileNm - file containing Main Menu information;
UsrGdMenuFileNm - file containing User Guide Menu information;
BBMenuFileNm - file containing Bulletin Board Menu information; and
DBMenuFileNm - file containing Database Menu information.

Additionally, any files referenced in the menu files must exist in their specified directories. The menu files specify the complete path (see below). The following files are created by the EICS during execution. The file name must be supplied by the application developer.

LogFileNm - file in which system usage statistics are recorded; and

PassFileNm - file used to pass information to Revelation routines.

MENU SYSTEM

The EICS runs primarily from text control (definition) files via a dynamic window utility, which reads the definition files to determine at run time what a menu will look like and what actions will be performed. A menu is invoked by the following call:

DynaMenu(<menu dir>, <menu filename>, <menu title>, <return var>)

where <menu dir> is the name of the directory containing menu files, <menu filename> is the name of the particular text control file to read, <menu title> is a string of text to display at the top of the menu, and <return var> is the name of a string variable which will hold data returned from the menu program. Lines in menu files must be in the following format (there must not be any empty lines at the end of the menu file):

<value>, 'text for menu entry', <action>

where <action> indicates what to do with the other two values. Thus, each line has, first, a value followed by a comma; second, a string of text which will be displayed as the menu entry line; and, third, an indication of what action to take. The first item is usually a file name (e.g., [Drive:][path]Filename[.ext]). The string for the menu entry line must be inside quotes (either single or double) and, if the quote character which is used appears within the line, then the appearance within the line should be doubled (e.g., 'User''s Guide'). Actions that can be taken upon selection of a menu item are as follows:

LIST
list the contents of the file associated with the menu item (<value> is a complete filename)

MENU
reinvoke DynaMenu using the file associated with menu item (<value> is a menu file name which must reside in the directory which holds all the menu files)

RETURNVALUE
return the value associated with menu item (<value> is returned and interpreted by the calling program)

To expand the list of possible actions, new values must be added to the "Action" field of the DM_MenuNodeType record. When a menu selection is made, a different set of actions is performed, depending on the value of the action field. DM_InitMenu and DM_TakeAction must be changed to support the new actions.

SPECIFIC MENU FILES

Main Menu File (variable MainMenuFileNm in MenuDir)

This file must contain one line for each option which appears in the Main Menu. If an option is noted as informative (see below), all that will appear when this option is selected is a message saying that this selection is not available. This is so that menu options can be temporarily disabled very simply without changing the Main Menu appearance. Any entry could be prefaced with 'I' and, as long as the associate text remains unchanged, the Main Menu looks the same. If different text is desired [e.g., "3) Databases not available"], this can be entered on the original line and it will appear in the same (usual) place in the Main Menu. Any or all of the following can be specified in any order. They will appear in the designated order in the Main Menu:

U, 'User's Guide Menu', <action>
B, 'Bulletin Board', <action>
D, 'Database Searches', <action>
E, 'Electronic Mail', <action>
I, 'Informative Message', <action>

Database Menu File (variable DBMenuFileNm in MenuDir)

This file must contain one line for each available database, as follows:

<Revelation database name>, 'Menu Entry Text', ReturnValue

APPLICATION CONTROL FILE

All items in the application control file are required. The format for the application control file is a two-line couplet with the variable name (and explanatory text) on one line, and the value to which the variable is to be set on the next line. The value to assign to the variable MUST BE ON A SEPARATE LINE. Further, each variable name must be correctly spelled and must be separated from any explanation on the same line. Thus, every odd numbered line in the application control file contains a variable name, and the following line contains the value to be assigned to the given variable.

Example Control File

```
Debug - this should be set to True to allow tracing statements
False
CurrVer - this should be the current version of the EICS system
1.0
EchoPlex - False for no echoing, True for EICS echoes characters
False
SystemName - Name of system to be used in headings, etc.
Literacy Provider's EICS
DatabaseOnline - False causes "search down" message, True allows searches
True
Warning1Time - integer minutes, terminal idle time before first warning
5
Warning2Time - integer minutes, terminal idle time before second warning
10
TimeOutTime  - integer minutes, terminal idle time before automatic logout
15
StdPrompt - string, default menu prompt
Please enter your selection:
MailEligibles - list of user ID substrings which determine email eligibility
PI,MD,MA,CO
OutOfRangeUsers - list of user ID substrings for which searches are not OK
PI,AL
Welcome1Text - name of file in which initial screen form is given
Welcome1.Txt
Welcome2Text - name of file in which auto-display short messages are given
Welcome2.Txt
EMailUsers - name of file containing current mail-user list (id and name)
MailUser.Lst
LogFileNm - name of file in which system usage statistics will be recorded
Usage.Log
PassFileNm - name of file used to pass information to Revelation routines
pass.$$$
UserDataFileNm - name of file containing user ID information
UserID.dat
SrchDwnFileNm - name of file containing text to display if search is down
SrchDwn.txt
MainMenuFileNm - name of file containing Main Menu information
Main.mnu
UsrGdMenuFileNm - name of file containing the User Guide Menu information
UseGuide.mnu
BBMenuFileNm - name of file containing the Bulletin Board Menu information
Bulletin.mnu
DBMenuFileNm - name of file containing the Database Menu information
DataBase.mnu
MainDir - directory where EICS-system data files are kept
\4968\
EMailDir - SUB directory used for storing mail-related files
email\
MenuDir - SUB directory used for storing dynamenu files
menus\
TextDir - SUB directory used for storing all text display files
text\
WorkDir - directory used for scratch files (current)
\.
```


BEST COPY AVAILABLE

DATABASE SECTION

The database search section of the EICS uses the Advanced Revelation database management system. The instructions which follow assume familiarity with Revelation; they are aimed at a Revelation programmer. For further information on terminology or usage, see the Advanced Revelation reference manuals.

Control Information

The following control variables at the top of record SETUP in file EICS.PROGRAMS must be edited and the program recompiled.

- APPLICATION_DIR,
- PASS.FILE.NAME,
- INHOUSE_MAIN_MENU_CALL, and
- TELE_MAIN_MENU_CALL.

The EICS Pascal program takes a parameter at run time which sets the output-designator. This allows the calls to the Main menu from inside Revelation to be to the same program but with different flags. The format to invoke the program is:

EICS <IOtype indicator > <control file name> [<user ID>]

where <IOtype indicator> is one of D, I, or S which indicate Demo mode, Inhouse mode, or Serialport mode, respectively; <control file name> is the name of the text file containing the application control information (explained below); and user ID is the ID of the user using the system (i.e., currently in search mode). If the (optional) user ID parameter is not specified, the program will start with the log-on screen. If the user ID is specified, this indicates that a currently logged on user is returning from a database search, so the program starts with the Main Menu (instead of the log-on screen).

Each database to be searched must be defined to the search programs by a set of control fields stored in the DICT of the database. At the very least, the fields must exist even if they are empty.

All control fields are implemented as G-type (group) or S-type (symbolic) records in the DICT of the given database. This means that they are not really fields in the database, as there is no associated data on the record level. What this does, however, is provide a manner of storing database-specific information with the database in a manner which is accessible (albeit in a round- about fashion) to Revelation programs such that "setup" information for a new database can be added to the system without any program changes and without needing to recompile the programs. Thus, when a new database is defined and made available for an existing EICS, all that is necessary to incorporate it into the system is to add a new menu option to the database menu file.

Control fields which comprise lists of field names are stored as G-type DICT records and the information is stored in the "Group" field. If there are multiple field names, they should be separated by spaces. This is normal usage for G-type fields. Control fields which comprise text or lists of items which are not field names (e.g., may contain spaces within a given item) are stored as S-type DICT records and the information is stored in the "Display" field. This puts the information in the third physical field of the record in both cases. S-type records with more than a single item should have the individual items on separate lines, i.e., as separate "values" within the field. To enter and format information in the "Display" field of S-type DICT records, use F3 (Zoom) to get a large screen, enter the information, use ^Z (Reformat) to ensure wrapping, then use F9 (save), Esc (exit zoom field), then F9 again to save the record. The required control fields are enumerated below.

Control Fields Per Database

ITEM.NAME - S-type field

This field contains the conceptual name of what is stored in the database, in lower case. For example, in a library system, this field would most likely be "book". In a referral database, this field might be "critique". It should be usable in a sentence such as

"Select the <item.name>s for which you wish information", or
"Select the books for which...".

CONTROL.FIELD - S-type field

This field contains the name of the database field by which the contents of the database are normally referenced, the field which would be used to determine whether or not a specific item is of interest, in lower case. For example, in a document system, this field would most likely be "title". In a reference database, this field might be "name". It should be usable in a sentence such as

"Review the <control.field>s of the <item.name>s", i.e., "Review the names of the publishers".

PRINT.FIELDS - G-type field

This field contains the names of all the fields which are to be printed when a user requests "full information", in upper case.

LEFT.MARGIN.TEXT - S-type field

This field contains the text which is to be displayed in the left margin for each field in PRINT.FIELDS in the same order as the

associated field names, in mixed case. That is, if PRINT.FIELDS contains the following

TITLE AUTHOR PUBLISHER ....

then LEFT.MARGIN.TEXT should contain

Title:
Author:
Publisher:
.
.
.

This information will be printed in the left margin on the first line of each field when the full information is printed. For this particular control field, the longest entry will determine the width of the left margin for printing information (margin width = length of longest entry plus one space). The application developer is responsible for ensuring that the sum of the left margin and the width of any text fields to be printed will fit on a page without wrapping (that is, the widths of text fields should be set accordingly).

SEARCH.FIELDS - G-type field

This field contains the names and types of all the fields which may be specified for searching, in upper case. Each field name given here will be included in the menu list for selecting fields on which to search. The text field on which users may search must be the last one specified in this list.

Each field name given here must have an associated index with the exception of the last field, which is the only field available for text searching. The names of fields which have cross-reference indexes should have ":X" appended to the field name, for example,

Title:X Author Publisher Subject:X....

INHOUSE.SEARCH.FIELDS - G-type field

This field contains the names and types of fields not in the above list which are available to in-house users. Each field name given here will be included in the menu list of searchable fields, but only if the user has logged on from an in-house terminal. No text searching fields are allowed in this section of the list; each field must have an associated index. The field typing information mentioned above for the regular search fields holds here as well.

HELP.FOR.<XX> - S-type field

This field contains explanatory text for search field <XX>. It is displayed if the user requests help while entering search specifications. The information in this field should aid the user in knowing whether or not this field will be useful in the search and also what type of information can be entered as the search criterion. There should be one of these fields for each field name specified in the SEARCH.FIELDS control field.

PROMPT.FOR.<XX> - S-type field

This field contains the prompt text for search field <XX>. It is displayed to prompt the user for search specifications. The information in this field should give the user an idea of what type of information should be entered as the search criterion. There should be one of these fields for each field name specified in the SEARCH.FIELDS control field.

NOTE: The HELP.FOR.XX and PROMPT.FOR.XX fields are normal text and are not accessed via the GET_CONTROL_INFO routine as are the others. These fields are retrieved with a straightforward read since their contents (which are @VM delimited) will be handed directly to the PRINT_FIELD routine.

Restrictions

Any PRINT.FIELD which contains data of type "DATE" must have the sequence of characters "DATE" in the field name. This is now used to control the correct conversion and display of date data when a user requests printed information.

At the present time, keyword lists (used in function LIST_VALID_KEYWORDS) must be in a file named <field>.LST in the Revelation application directory. These files are created by running the utility LIST-INDEX-VALUES and specifying the file and field names.